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**Fabrication and Electrical Characterization of Zinc Oxide Nanowires** DAQING ZHANG, CHUN-HONG LEE, CSU Fresno, CHRIS BERVEN, Univ. of Idaho, VANVILAI KATKANANT, CSU Fresno — One dimensional semiconducting zinc oxide (ZnO) nanowires have drawn attractive attentions in the past years. The unique electrical, optical, and piezoelectric properties of ZnO nanowires make them broaden applications ranging from light emitting diode and lasers, solar cells, photodetectors, electron transporters and transistors, to piezoelectric generators. In our research, two-terminal current-voltage (I-V) measurements were conducted to determine the electrical conductivity alternation of the ZnO nanowires under laser irradiation, and various gaseous surroundings. The I-V curves at the temperature ranged from 150 to 300 K were recorded in vacuum. The Arrhenius plot shows perfect linear relation between I and 1/T. The donor lever of the semiconducting nanowire is about 326 meV. We observed that the current increased 50% with laser on in comparison to that with it off; it raised by a factor of four under ambient reductive gas CO. In addition, the I-V behaviors were found to be reversible with those various environments. Further studies on the possible nano- devices such as optical switches and chemical sensors are undergoing.

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